

UNITED STATES PATENT APPLICATION

OF

In Hee HAN

FOR

STRUCTURE OF MOTOR SHAFT IN CLOTHES DRYER

[0001] This application claims the benefit of Korean Application(s) No. P2002-0055460 filed on September 12, 2002, which is/are hereby incorporated by reference.

BACKGROUND OF THE INVENTION

Field of the Invention

[0002] The present invention relates to clothes dryers, and more particularly, to an improved assembly structure of a shaft and a bracket of an idle pulley assembly that is a tension adjusting means in a clothes dryer.

Discussion of the Related Art

[0003] In general, the clothes dryer is an appliance for automatic drying of an drying object, such as washed wet clothes, of which related art system will be described.

[0004] FIG 1 illustrates a longitudinal section showing a system of a related art clothes dryer, provided with a body 1 having an introduction opening 101 in a front surface, a drying drum 30 rotatably mounted in the body 1 having a plurality of ridges 30a on an inside circumferential surface, a door 105 for opening/closing the introduction opening 101 selectively, a motor 50 fixed to an inside of the body 1 for generating a rotating force, a rotation power transmission device for transmission of the rotation force from the motor 50 to the drying drum 30, hot air guiding flow passages 10a and 10b for guiding air flow to introduce external air into the drying drum 30 and discharge to an outside of the body 1, a heater 20 in the hot air guiding flow passage 10a for heating the air, and a fan 40 connected to the motor shaft 500 for generating a forced blowing power to draw the external air through the hot air guiding flow passage 10a and discharging to an outside of the body 1.

[0005] In the meantime, the drying drum 30 in the related art clothes dryer has a support shaft in rear thereof rotatably supported on the body 1, for being made rotatable upon

receiving the rotation power of the motor 50 by means of the rotation power transmission device, wherein, by rotating the drying drum 30, entangling of the drying objects therein is prevented, and continuous movement of the drying objects in the drying drum 30 is made, to deliver the hot air supplied to an inside of the drying drum 30 uniformly, thereby improving drying performance.

[0006] The rotation power transmission device is provided with a driving pulley 52 connected to the driving shaft 51 of the motor 50, and a drum rotating belt 60 for coupling the driving pulley 52 and the drying drum 30, for transmission of the rotating power of the motor 50 to the drying drum 30 through the belt 60, to make the drying drum 30 rotatable.

[0007] In the meantime, for preventing the belt 60 from slipping at the time of movement of the drying drum 30, there is a tension adjusting means at one side of a motor bracket 53 for keeping application of a tension to the belt 60.

[0008] A clothes drying process of the related art clothes dryer will be described.

[0009] First, after introduction of the drying object into the drying drum 30, a drying cycle is carried out, to put the heater 20 and the motor 50 into operation.

[0010] Then, as the fan 40 is operated, the external air introduced into the body 1 through an inlet of the hot air guiding flow passage 10a passes, and heated at, the heater 20, and flows into the drying drum 30 through the hot air guiding flow passage 10a, forcibly.

[0011] Then, the hot air introduced into the drying drum 30 repeats circulation in which the hot air vaporizes moisture in the wet drying objects, and is discharged to the outside of the body 1 through an outlet of the hot air guiding flow passage 10b by a suction blowing power of the fan 40, when the drying drum 30 rotates slowly as the drying drum 30 receives the driving power of the motor 50 through the belt 60, to lift and drop the drying objects therein with the ridges 30a, during which process, the drying objects are dried.

[0012] However, the related art clothes dryer has the following problems when it is intended to dismount the fan 40 from the motor 50 for service.

[0013] In a case when it is intended to dismount the fan 40 from the motor 50 for service, such as repair, or change of a component, it is required to unfasten a nut 'N' that fastens the fan 40 to the motor shaft 500, to do which the motor shaft 500 is required not to move.

[0014] That is, since unfastening of the nut 'N' is difficult if the motor shaft 500 moves, it is required to hold the motor shaft 500 for preventing the motor shaft 500 from moving.

[0015] However, since the related art motor shaft 500 has a circular section, clamping of the motor shaft 500 with a tool, such as a spanner, is difficult, resulting in a poor workability in dismounting the fan 40.

[0016] Moreover, when the nut 'N' is fastened for mounting the fan 40 on the motor shaft 500 after finish of the service, the fastening of the nut 'N' is not easy as the motor 500 shaft turns together with the nut 'N'.

SUMMARY OF THE INVENTION

[0017] An object of the present invention, devised to solve the related art problem, lies on improvement of workability by making the motor shaft able to be held in dismounting the fan from the motor shaft of clothes dryer for preventing the motor shaft from moving.

[0018] To achieve the object of the present invention, the present invention suggests providing a motor shaft structure in a clothes dryer having a drying drum rotatably mounted in a body, a motor bracket fixed to a bottom of an inside of the body, a motor mounted on the motor bracket for generating a rotating power, and a fan coupled to the motor with a shaft,

includes chambered parts.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] The accompanying drawings, which are included to provide a further
5 understanding of the invention and are incorporated in and constitute a part of this application,
illustrate embodiment(s) of the invention and together with the description serve to explain
the principle of the invention. In the drawings:

[0020] FIG. 1 illustrates a longitudinal section showing a system of a related art
clothes dryer,

10 [0021] FIG. 2 illustrates a detail of key parts of FIG. 1,

[0022] FIG. 3 illustrates a section of a motor shaft across a line I-I in FIG. 2,

[0023] FIG. 4 illustrates a longitudinal section showing technical key parts of the
present invention,

[0024] FIG. 5 illustrates a section of a motor shaft across a line II-II in FIG. 3.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT(S)

[0025] Reference will now be made in detail to the preferred embodiment(s) of the
present invention, examples of which are illustrated in the accompanying drawings.
Throughout the drawings, like elements are indicated using the same or similar reference
20 designations where possible.

[0026] A preferred embodiment of the present invention will be described in more
detail with reference to FIGS. 6 ~ 8.

[0027] In the following description, parts identical to the related art will be given the
same reference numerals, and detailed description of which will be omitted.

[0028] FIG. 6 illustrates a front view of an idle pulley assembly of the present invention, FIG. 7 illustrates a longitudinal section across a line II-II in FIG. 5, and FIG. 8 illustrates a front view of an idle shaft inserting hole in an idle bracket of the present invention, wherein the present invention suggests providing a motor shaft structure in a clothes dryer having a drying drum 30 rotatably mounted in a body 1, a motor bracket 53
5 fixed to a bottom of an inside of the body 1, a motor 50 mounted on the motor bracket 53 for generating a rotating power, and a fan 40 coupled to the motor 50 with a shaft, includes chambered parts 500a.

[0029] In the meantime, the chamfered part 500a in the shaft 500 of the motor 50 has
10 a D-cut form.

[0030] The operation of the present invention will be described.

[0031] When it is intended to dismount the fan 40 from the motor 50 for service, it is required to unfasten the nut 'N' that fastens the fan 40 to the motor shaft 500, for which the motor shaft 500 is required to be held.

15 [0032] In this instance, since the motor shaft 500 of the present invention has the chamfered parts 500a in the shaft, the chamfered parts 500a can be clamped with a tool, such as a spanner, to prevent the motor shaft 500 from turning, thereby making the unfastening of the nut 'N' easy.

20 [0033] That is, in the case of the present invention, the tool, such as the spanner, is inserted into a gap between the motor bracket 53, to clamp the chamfered parts 500a of the motor shaft 500, and unfasten the nut 'N' in a state the motor shaft 500 is prevented from moving.

[0034] In the meantime, even in mounting the fan 40 on the motor shaft 500, by clamping the chamfered parts 500a with the spanner, to prevent the nut 'N' from moving,

fastening of the nut 'N' can be carried out with easy.

[0035] Even though it is preferable that the chambered parts 500a at one side of the motor shaft 500 have D-cut forms, the form is not limited to this.

[0036] Accordingly, the present invention has the following advantages or effects.

5 [0037] As has been described, the present invention improves a motor shaft structure of a clothes dryer, to improve workability in mounting/dismounting a fan.

[0038] That is, by making clamping of the motor shaft easy, to make, not only the unfastening of the nut for dismounting the fan, but also fastening of the nut for mounting the fan easy, the present invention improves workability.

10 [0039] It will be apparent to those skilled in the art that various modifications and variations can be made in the present invention without departing from the spirit or scope of the invention. Thus, it is intended that the present invention cover such modifications and variations, provided they come within the scope of the appended claims and their equivalents.